Sixth Annual Report

MacDONALD FARM DEMONSTRATION WOODLOT

New Nouveau Brunswick

Municipalities, Culture and Housing

Natural Resources and Energy

"Your Environmental Trust Fund at Work"

April 1, 1997 - March 31, 1998

MacDonald Farm Demonstration Woodlot

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MacDonald Farm Demonstration Woodlot

Background

On May 12, 1992 the formal proposal to establish a Demonstration Woodlot on the unmanaged portion of the MacDonald Farm Historic Site property was presented to senior staff of the Department of Municipalities, Culture and Housing and Natural Resources and Energy. An Executive Summary, a 5-year Management Plan, an Operating Plan outlining activities for the first year development, as well as an estimate of costs and funding sources, were prepared.

The proposal, accepted in principal by senior staff, was presented to the Executive Management Committee of the Department of Natural Resources and Energy for formal approval. Conditional approval was granted by the Executive Management Committee pending demonstration that funding could be obtained and would be forth coming from available sources.

On October 28, 1992, a Memorandum of Understanding was agreed to and signed by the Deputy Ministers of the Departments of Natural Resources and Energy and Municipalities, Culture and Housing. The Memorandum details the methods by which the property will be developed, maintained and operated for a 20-year period.

MacDonald Farm Demonstration Woodlot

On January 30, 1993 a permit, valid for a period of 20 years, was issued by the Minister of Municipalities, Culture and Housing under provisions of the **Historic Sites Protection Act** authorizing all activities deemed necessary to complete development of the **MacDonald Farm Demonstration Woodlot**. On June 7, 1993 the formal announcement establishing the Demonstration Woodlot was made during the opening of the MacDonald Farm Historic Site.

Goal

The **MacDonald Farm Demonstration Woodlot**, is a parcel of forested land set aside to provide woodlot owners and the general public with an opportunity to see proper forest management techniques and the benefits of integrated resource management firsthand.

The primary goal of the Demonstration Woodlot is to increase and promote woodlot owner and public awareness and education, and to demonstrate operational and experimental silvicultural techniques and equipment. Activities carried out there will harmonize with the objectives of maintaining the integrity of the site as a protected historic site.

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Management

A management team was established whose responsibility it will be to carry out the overall objectives by which the property will be developed, maintained and operated. The management team has the responsibility to seek funding sources, to implement the 1 year Operating Plan, to ensure the delivery of a public relations strategy, to prepare a reporting schedule which will allow for the completion, monitoring, and evaluation of the operating and management plans, and to review, assess and incorporate the 5 year Management Plan.

Management Team

The Management Team members for the 1997-98 operating period were Charles Allain, Heritage Development Officer, Heritage Branch, MCH, John Stuart, Extension Forester, Miramichi Region, DNR&E and Dale Wilson, Manager, Woodlot Education, Forest Extension, DNR&E. The Ex-Officio members are Wayne Burley, Director, Heritage Branch, MCH, Brian Hatch, Regional Resource Manager, Miramichi Region, DNR&E, Robert Bettle, Manager, Forest Extension, DNR&E.

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ANNUAL REPORT

YEAR SIX OPERATION

April 1, 1997 - March 31, 1998

The stated objectives for the 1997-98 operating year were; to continue silviculture treatments, conduct a field day, develop a brochure for self-guided tours and conduct general clean up and maintenance activities as required.

The sixth annual report will cover the progress to date in three areas:

1. Outreach and Education
2. A. Infrastructure
   B. On-Site Development
3. Financial

MacDonald Farm Demonstration Woodlot

1. Outreach and Education

A Woodlot Management Field Day directed at participants of the Forest Extension Services Woodlot Management Courses was held in June. The event consisted of a walking tour of the woodlot to view the work completed to date as well as a discussion of the various options/alternatives available to woodlot owners in the management of their properties.

Various pieces of equipment used in the development of the property were also present with hands on use available to the participants.

Two grade 11 classes from James M. Hill High School in Miramichi toured the woodlot as part of their environmental studies program. The woodlot visit was followed up with a classroom presentation dealing with the integration of wildlife management activities and timber production. Three grade 2 classes from Croft Elementary School in Miramichi also toured the woodlot with the main emphasis placed on the development and production of Christmas trees.

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A summer program directed at elementary aged school children, sponsored by MacDonald Farm, provided an opportunity for guided tours of the woodlot. This program was offered in both official languages.

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2. A. Infrastructure

Trail Construction & Maintenance

A total of 587 M of trail was located, cleared and grubbed in the northern end of the woodlot. This section of trail will provide access to Stand no. 7.

In addition, blowdown trees were cleaned up, grass and brush along the trails were mowed, ditches maintained.

The two picnic table shelters constructed in 1996 were shingled and tables constructed.

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2. B. On-Site Development and Maintenance

An application was submitted and approved through the Rural Experience Program. Funding included salaries plus $1000.00 per employee for training, supplies, equipment repairs, etc. The MacDonald Farm Woodlot Account was used to pay additional expenses. As a result, six individuals were employed during a 16 week period for a total of 96 work weeks.

Activities included maintenance work around the farm buildings, clean up of dead and blown down timber, maintenance of discussion areas as well as the repair and placement of podiums and signs.

Within the Christmas tree development area the trees were fertilized at a rate of 1000 kg/ha (892 lb/ac) with 10-10-10 fertilizer. Undesirable woody vegetation was cut and the trees sheared.

White pine seedlings were planted in the white pine shelterwood area. The density was 2941 per ha. Or 1190 per acre. Stocking was 100%. Two trays of jiffy container stock obtained from the provincial forest nursery were used. Planting was

required because the original harvest operation failed to scarify the ground sufficiently for good seed germination.

The balance of the 1995 horse logging area was thinned using power saws. The lower branches on all trees were trimmed off using axes and brush axes. The final density was 1925 stems per ha at 71% stocking with an average height of 3 m. The species composition was balsam fir 87%, spruce 9%, and white pine and red maple at 2% each.

A semi-commercial thinning of a 0.4 ha (1.0 ac) portion of the black spruce stand (Stand no. 1) was begun. Only a small portion was thinned with a total of 5 cords (10.6 m^3) harvested. This translates to 13 cds/ac or 65 m^3/ha.

An additional 5 cords (10.6 m^3) was harvested from the 1994 black spruce thinning along the main road (Stand no.1, Treatment no. 4). The harvested timber included blowdown, leaning trees and an overly dense strip along the road. The purpose is to permit more sunlight to reach the forest floor and promote natural regeneration.

3. Financial

A purchase pulpwood agreement for 180 m^3 (st) or 50 cords of softwood pulpwood at a delivered price of \$24.00/m^3 (st) or \$87.00/cd was signed with Repap New Brunswick Inc. This represents a 5.5% price decrease over 1996-97 rates.

A total of 153.7 m^3 (st) or 42.4 cords of softwood pulpwood was delivered to the Repap Kraft Mill with a gross value of \$4,242.67.

Small volumes of hardwood and softwood sawlogs were produced during work on the woodlot. The sawlogs were sawn on site by a local band sawmill owner and the lumber stored for later use. The slabs from the logs as well as the hardwood were processed into fuelwood for use on the Farm.

A Kawasaki 4x4 ATC equipped with a 2000 lb electric winch and extended warranty was purchased. The cost of the ATC was cost shared by the MacDonald Farm Woodlot Account and Municipalities, Culture and Housing – Heritage Branch. The ATC will be used in the day to day management of the MacDonald Farm Historic Site as well as the Woodlot.

MacDonald Farm Demonstration Woodlot

A summary of Revenues and Expenditures for the MacDonald Farm Woodlot for 1997-98 is contained in Appendix I.

MacDonald Farm Demonstration Woodlot

YEAR SEVEN OPERATING PLAN

April 1, 1998 - March 31, 1999

The objectives for the 1998-99 Operating Year are:

1. Trail Development
2. Silvicultural Treatments
3. Educational Programs
4. Spring Cleanup

1. Trail Development

Complete the development of the new section of trail to include grooming, location and installation of ditches and cross drains, yard timber and construct and place benches as required.

MacDonald Farm Demonstration Woodlot

2. Silvicultural Treatments

Development work will continue in three treatment areas including the Christmas tree production site which will require fertilization, shearing and brush control.

Two potential planting sites have been identified and will involve the planting of white pine as an understory component. The long term objective is to increase the percentage of white pine on the woodlot.

A semi-commercial thinning located in Stand no. 1, black spruce, will be completed. This treatment is 0.4 ha (1.0 ac) in area with the objective of increasing the sawlog component.

Two new treatments are being proposed. The first will involve the removal of the residual overstory followed by pre-commercial thinning of the understory. This treatment 1.0 ha (2.4 ac) in area is similar to the area treated by horse in 1995. The primary difference will be that the residuals will be removed by a winch mounted on a farm tractor. The second treatment will be conducted in the hardwood stand (Stand no. 7). This essentially will be a thinning from below with the objective of

promoting the regeneration of tolerant hardwood species.

3. Educational Program

Staff will be made available to provide tours to interested school groups during June of 1998. This program will compliment school visits to the farm site.

A summer program, similar to the one offered in 1997 directed at elementary aged school children is proposed. This program is activity based and will require tours of the woodlot one day per week.

A woodlot management field day is planned for late September and will focus on the use of tractor mounted winches to remove residual overstory.

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4. Spring Cleanup

As required, repair and replace signs, clean up blowdown, clean out ditches, place podiums, benches and wildlife silhouettes and yard scattered piles of wood cut during 1997 activities.

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Appendix I

Summary of Revenues and Expenditures

1997-98

Revenues		
Balance Forward as of April 1, 1997		2 617.83
Softwood Pulpwood (42.4 cords)		3 689.28
	TOTAL	$6 307.11
Expenditures		
Trail Construction (backhoe rental)		1 054.08
Building Materials, Supplies, Etc.		178.89
ATC (cost shared)		3 545.45
	SUB TOTAL	$4 778.42
Balance Remaining (March 31, 1998)		1 528.69
	TOTAL	**$6 307.11**

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Appendix II

Silvicultural Treatments

STAND AND TREATMENT DESCRIPTIONS

STAND NO. 1

Stand no. 1, 11.5 ha in area is the largest stand on the property and contains silvicultural treatments 1, 2, 3 and 4. Treatment no. 1 is the stand proper while no's 2, 3 and 4 are micro-sites within stand no. 1 which contain trees having greater heights and diameters.

The stand is characterized by a dense pulpwood size thicket composed primarily of black spruce with scattered larch, white pine, cedar, white birch and red maple.

Two age classes are present, 100 and 50 years for the over and understory respectively. The overstory contains only scattered residuals the result of harvesting 45-50 years ago.

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Stand volume is 1500 m^3 (125 m^3/ha). Fully 83% of the volume (104 m^3/ha) is contained in black spruce 10-22 cm in diameter.

Due to poor drainage, the stand is shallow rooted and susceptible to blowdown as evidenced by storm damage which occurred during the preceding three winters. Combined with acceptable crown ratio's and lack of natural regeneration the following treatments are proposed for this stand.

TREATMENT NO. 1: Winter storms have caused blowdown and tree breakage in small patches throughout the stand. Merchantable timber within these areas will be salvaged followed by manual site preparation and planting of the open areas. The density of the balance of the stand will be reduced by means of residual removal and a light thinning.

The tenet here is a light treatment. Depending on the response, additional thinnings at 5-10 year intervals will be required.

The objective is to reduce stand density, increase individual tree diameter and volume for the purpose of pulpwood production.

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TREATMENT NO. 2: is located in the south east corner of stand no. 1. This area will be left as an undisturbed control.

TREATMENT NO. 3: is located in the north-east corner of stand no. 1 and will consist of a commercial thinning. It may be possible to incorporate a control area within this treatment. Should this not be possible, then treatment no. 2 will serve as the control.

The objective here is to increase tree diameter with the aim of producing sawlogs.

TREATMENT NO. 4: runs parallel to and on both sides of the proposed road and will consist of a commercial thinning. Objectives and methodology will be similar to treatment no. 3. A control and reserve area will also be included at this location.

STAND NO. 2

Stand no. 2 is 4.5 ha in area and contains silvicultural treatments 5 and 7.

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This stand is characterized by an overstory of cedar, white pine, and black spruce, sawlog size trees with an understory of black spruce, white pine, and white birch. Scattered larch, balsam fir, red maple and hemlock are also present. Scattered patches of advance regeneration 1-3 m in height composed of balsam fir, white pine and black spruce are also present.

Age class distribution is similar to stand no. 1, except for the addition of the regeneration.

Stand volume is 660 m^3 (164 m^3/ha). White pine, cedar and spruce and fir comprise 38, 26 and 19 percent of the volume respectively.

TREATMENT NO. 5: will consist of a white pine shelterwood.

The objective is to improve over all stand quality with the removal of less desirable and poorer quality trees in conjunction with the establishment of white pine regeneration.

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TREATMENT NO. 7: will consist of a mixed wood shelterwood, very similar to treatment no. 5 in prescription. The major difference being that instead of managing for a single species the objective will be to maintain existing species composition and improve overall stand quality. This treatment may border on the selection system of uneven-aged management.

Treatment unit no.'s 5 and 7 will over time see the removal of the mature overstory combined with the release of the younger trees.

Control and reserve areas will be maintained in both of these treatment units.

STAND NO. 3

Stand no. 3 is 5.5 ha in area and contains silvicultural treatment no's 8 and 9.

This stand shows the greatest diversity of age class and species composition. Three distinct age classes are present. As in the preceding stand, 100 and 45-50 years as well as scattered patches of advance regeneration.

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With the exception of the regeneration the balsam fir has been harvested by the budworm.

Scattered red oak seedlings and saplings are present in stand 3, 4 and 6. No mature trees were observed indicating a seed source outside the property. Where found, this species will be preserved.

Stand volume is 500 m^3 (101 m^3/ha). Spruce, white birch and white pine comprise 48, 35 and 14 percent of the volume respectively. Balsam fir, red pine, red maple and poplar make up the balance. The advance regeneration is composed of balsam fir, spruce, red maple and cedar.

One unusual feature was the quantity of cedar advance regeneration present in stands 3, 4 and 6. The cedar was uniformly distributed with only the odd scattered mature tree evident.

TREATMENT NO. 8: will consist of uneven-aged management by means of the selection system. Due to the nature of the regeneration, patches will be pre-commercially thinned with manual site preparation and fill planting in the

understocked areas.

The objective is for the production of softwood sawlogs and pulpwood and hardwood pulpwood and fuelwood.

Future activities will involve the periodic and partial removal of the mature and poorer quality trees, to maintain the age structure and improve over all stand quality.

TREATMENT NO. 9: involves the management of a two-storeyed stand consisting of white birch over balsam fir.

Numerous options are available for this unit. They include: maintenance of the existing structure; removal of white birch to favour the balsam fir; and removal of balsam fir to favour white birch.

The most appropriate treatment(s) for this unit will be determined upon further investigation.

Control and reserve areas will be determined in both of these treatment units.

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STAND NO. 4

Stand no. 4, 5.5 ha in area, contains silvicultural treatment no's 10, 11 and 12. In general, the stand is composed of an overstory of scattered spruce and fir, white pine, cedar, white birch and red maple. The understory, depending on location within the stand is either dominated by spruce or balsam fir. Additional species include cedar, red maple and white birch.

Stand volume is 352 m^3 (70 m^3/ha). White pine, spruce, fir and red maple comprise 29, 25 and 24 percent of the volume respectively.

TREATMENT NO 10: will consist of selective management to maintain an uneven-aged structure.

The objective is to preserve the existing white pine, promote natural pine regeneration and improve stand quality by removing poorer quality trees.

TREATMENT NO. 11 and 12: are similar in that the hardwood dominated overstory, which is of poor quality, will be removed, while the spruce and balsam fir advance regeneration will be pre-commercially thinned. The best balsam fir dominated area will be cultivated for Christmas Trees while the spruce dominant area will be managed for pulpwood/sawlog production.

Control and reserve areas will be maintained in all three treatment units.

STAND NO. 5

Stand no. 5 is 1.5 ha in area and contains silvicultural treatment no. 13.

This stand is wet and shallow rooted with patches of blowdown.

TREATMENT NO. 13: will consist of the salvage of blowdown and storm damaged timber. A light thinning will also be necessary.

Volume figures are not available due to the small size of stand.

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STAND NO. 6

Stand no. 6, 4.5 ha in area, contains silvicultural treatment no. 14. Stand no. 6 is similar to stand no. 4 in structure. However, the hardwood dominated overstory has been replaced with softwoods while the understory of advance regeneration composed of spruce and balsam fir remains unchanged.

Stand volume is 285 m^3 (71 m^3/ha). Spruce and balsam fir, white pine and maple comprise of 67, 15 and 8 percent of the volume respectively.

TREATMENT NO. 14: will consist of selective management to maintain the overstory for as long as possible, and release the understory by means of a pre-commercial thinning.

The objective is management for the production of softwood pulpwood and sawlogs.

Future activities will require the gradual removal of the mature overstory with merchantable thinning in the younger understory.

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Control and reserve areas will be maintained in treatment unit no. 14.

STAND NO. 7

Stand no. 7 is 1.5 ha in area and contains silvicultural treatment no. 15.

This stand is characterized by an overstory of spruce, red maple, sugar maple and beech. Scattered yellow birch and cedar are also present. Advance regeneration includes sugar maple, white birch and spruce and balsam fir. Striped maple is present in considerable numbers as an understory.

A large seep or small spring with a large pool of water is present. No drainage pattern is evident but it is believed that the water drains into stand no. 5.

TREATMENT NO 15: will consist of selective management of the tolerant hardwoods.

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The objective will be to gradually remove the striped maple to permit the regeneration of the more desirable tolerant hardwood and make browse available for wildlife.

SILVICULTURAL TREATMENT NO. 6: will reforest a cleared strip along the western property boundary.

White pine and sugar maple will be planted at the lower and upper ends of strip respectively. The area in between will be planted with fruit and nut bearing trees and shrubs of benefit to wildlife.

DISPOSAL OF FOREST PRODUCTS

Harvested forest products will be disposed of in accordance with accepted Government policy.